

32551  
S/143/61/000/011/008/009  
D203/D302

26.5/00

AUTHOR:

Shevelev, A. A., Engineer

TITLE:

Determining the optimum heating rate of some bodies

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Energetika,  
no. 11, 1961, 77-83

TEXT: The process of heating of bodies of three geometrical  
shapes (plate, cylinder and sphere) is considered. The conditions  
of heating are:

$$\frac{\partial t}{\partial \tau} = a \left[ \frac{\partial^2 t}{\partial \xi^2} + \frac{k \partial t}{\xi \partial \xi} \right]$$

(k = 0, 1, 2)

(1)

(2)

$$t|_{\tau=0} = t_0$$

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$$\left. \frac{\partial t}{\partial \xi} \right|_{\xi=0} = 0 \quad (3) \quad X$$

$$-\frac{\partial t}{\partial \xi} + \frac{\alpha}{\lambda} [t_0 + b\tau - t] = 0 \text{ (on the surface)} \quad (4)$$

where  $\xi$  = flow coordinate;  $t_0$  = initial temperature of the body;  
 $\tau$  = time;  $\lambda$  = heat conductivity;  $\alpha$  = heat transfer coefficient;  
 $a$  = thermal conductivity;  $b$  = speed of heating the medium. Equations for thermal stresses are combined with those describing the temperature change in the body. The maximum stresses at points  $\xi = R$  (where  $R$  is a characteristic dimension of the body) depend on the difference between the mean and the surface temperatures of the body. The coordinates of the mean temperature are found

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( $\bar{x} \cong .5777 R$  for the plate) and the final expressions for the maximum stresses are:

$$\sigma = - \frac{1BE}{3(1-\nu)} \cdot \frac{bR^2}{a} [1 - \varphi] \quad (25)$$

for a plate;

$$\sigma = - \frac{1BE}{8(1-\nu)} \cdot \frac{bR^2}{a} [1 - \varphi] \quad (26)$$

for a cylinder;

$$\sigma = - \frac{1 \cdot BE}{15(1-\nu)} \cdot \frac{bR^2}{a} [1 - \varphi] \quad (27)$$

for a sphere;  $\varphi$  depends on Biot and Fourier numbers ( $Bi = \frac{h}{\lambda} R$ ;  $F_o = \frac{\alpha}{R^2} \cdot \tau$ ),  $B$  is the coefficient of thermal expansion,  $E$  the modulus of elasticity.

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lus of elasticity and  $\nu$  the poisson ratio. The maximum thermal stresses in a plate are given in Fig. 1. When  $\varphi$  becomes zero at two points of the body ( $\xi = \bar{x}$  and  $\xi = R$ ), the stresses reach their maximum possible values. The rate of heating at those points is then constant and equal to the rate of heating of the medium. When these conditions are not reached the maximum stress or the permissible speed of heating are found if  $\varphi$  is known. The author states that his calculations have shown that the series for  $\varphi$  converge very rapidly and the approximate solution for all three shapes and for  $F_0 \gg 0.22$  is

$$\varphi = \exp(-\mu^2, F_0) \quad (32)$$

where  $\mu$  is the first root of a corresponding characteristic equation. The author gives a graph  $\varphi = f(F_0)$  for  $Bi = \infty$ . If  $Bi < \infty$  the graph can still be used; in this case the independent variable is determined from

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$$Fo_{\infty} = Fo \frac{u_1^2}{u_{1\infty}^2} \quad (33)$$

A graph of the ratio  $u/u_{1\infty}$  is also given. This article was recommended by the Kafedra obshchey teplotekhniki (Department of General Thermal Engineering). There are 5 figures and 3 Soviet-bloc references.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut imeni V. I. Lenina (Khar'kov Polytechnical Institute imeni V.I. Lenin)

SUBMITTED: August 2, 1960

Card 5/6/5

21778  
S/170/61/004/004/009/014  
B113/B214

26.2181

AUTHOR:

Shevelev, A. A.

TITLE:

Temperature stresses and the optimum conditions for heating

PERIODICAL:

Inzhenerno-fizicheskiy zhurnal, v. 4, no. 4, 1961, 75-79

TEXT: Under the usual conditions of heating from the outside and taking account of the maximum temperature stresses, regular bodies, an infinite plate, a cylinder, and a sphere are considered in this paper. In the theory of elasticity the temperature stress is given by  $\sigma = k\Delta t$ , where  $\Delta t$  is the temperature difference and  $k$  a coefficient depending on the physical properties of the body and the manner in which it is fixed. The expressions for the maximum temperature stresses are obtained by integration of general expressions for the temperature stresses of bodies of regular form. Here, the equation

$$t = t_0 \sum_{n=1}^{\infty} A_n U_n \exp(-\mu_n^2 Fo), \quad (2)$$

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must be taken into account, which gives the temperature changes in the body under the corresponding conditions. Here,  $\theta_0$  is the initial elevation of temperature of the body over the temperature of the medium to be cooled,  $A_n$  is the thermal amplitude depending on the initial conditions, and  $U_n$  is the eigenfunction of the problem: for the plate

$U_n = \cos \mu_n \frac{x}{R}$ , for the cylinder  $U_n = J_0(\mu_n \frac{r}{R})$ , and for the sphere

$U_n = \frac{R}{r} \frac{\sin \mu_n \frac{r}{R}}{\mu_n}$ .  $R$  is the characteristic dimension of the body. For the

maximum heat stress in plate, cylinder, and sphere one obtains, respectively, the equations

$$\sigma_y = \sigma_z = \frac{\beta E}{1-\nu} \theta_0 \sum_{n=1}^{\infty} A_n \left( \frac{\sin \mu_n}{\mu_n} - \cos \mu_n \right) \exp(-\mu_n^2 Fo), \quad (3) \quad (3)$$

$$\sigma_0 = \frac{\beta E}{1-\nu} \theta_0 \sum_{n=1}^{\infty} A_n \left[ \frac{2J_1(\mu_n)}{\mu_n} - J_0(\mu_n) \right] \exp(-\mu_n^2 Fo), \quad (4) \quad (4)$$

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and

$$\sigma_y = \frac{\beta E}{1-\nu} \eta_0 \sum_{n=1}^{\infty} A_n \left[ \frac{3}{\mu_n^2} \left( \frac{\sin \mu_n}{\mu_n} - \cos \mu_n \right) - \frac{\sin \mu_n}{\mu_n} \right] \exp(-\mu_n^2 Fo), \quad (5) \quad (5).$$

Here,  $\beta$  is the coefficient of linear expansion,  $E$  the modulus of elasticity, and  $\nu$  the Poisson's ratio. By comparing these three equations with  $\sigma = k \Delta t$ , the maximum temperature difference can be determined. The expressions standing behind  $\frac{\beta E}{1-\nu}$  in the Eqs. (3) - (5) characterize the difference of temperature between the mean temperature  $t$  of the body and the temperature  $t_0$  of the cooling surface. The mathematical condition for the determination of the coordinate of the mean temperature in the state of regular cooling for plate, cylinder, and sphere is given by the following equations:

$$\frac{\sin \mu_1}{\mu_1} - \cos \mu_1 \frac{x^*}{R} = 0, \quad (6) \quad (6)$$

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$$\frac{2J_1(\mu_1)}{\mu_1} - J_0\left(\mu_1 \frac{r^*}{R}\right) = 0, \quad (7)$$

$$\frac{3}{\mu_1^2} \left( \frac{\sin \mu_1}{\mu_1} - \cos \mu_1 \right) - \frac{R}{r^*} \frac{\sin \mu_1 \frac{r^*}{R}}{\mu_1} = 0. \quad (8)$$

The corresponding maximum difference of temperature is given by

$$\Delta \theta_{\max} = \sum_{n=1}^{\infty} A_n \Phi_n \exp(-\mu_n^2 Fo_{\max}). \quad (10) \quad (10).$$

Here,  $\Phi_n$  is obtained from Eqs. (6) - (8). It turns out that the generalized time  $Fo_{\max}$  of the appearance of the maximum value of  $\Delta \theta_{\max}$  in the most general case depends on the Biot criterion and on the configuration of the body. The process of the cooling of the body

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practically ends long before the stationary conditions set in. In this case, the change in time of the relative excess temperature of an arbitrary point of the body is given by the exponential law:  
 $\theta = A_1 U_1 \exp(-m\tau)$ . In this formula,  $m$  is the rate of cooling of the body which can be determined according to the formula  $m = i \cdot Bi \Psi Fo_1$ ,  $m = m_\infty M$ , where  $i$  is the number of the finite dimensions of the body,  $\Psi$  the parametric criterion characterizing the inhomogeneity of the temperature field,  $Fo_1$  the Fourier criterion for  $\tau = 1$  hour,  $M = m/m_\infty$  the criterion for the cooling rate, and  $m_\infty = \mu_{1\infty}^2 Fo_1$ . The cooling time is determined by  

$$\tau = \frac{\ln A_1 + \ln U_1 - \ln \theta}{m}$$
. Here,  $\theta$  is the relative excess temperature at any characteristic point of the body at the end of the cooling period. The relations obtained were experimentally checked with the aid of a model of a cylinder of a turbine. Theory and experiment are found to be in good agreement. There are 2 figures, 1 table, and 3 Soviet-bloc references.

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ASSOCIATION: Politekhnikheskiy institut im. V. I. Lenina, g. Khar'kov  
(Polytechnic Institute imeni V. I. Lenin, Khar'kov)

SUBMITTED: May 20, 1960

Card 6/6

SHEVELEV, A.A., inzh.

Determination of the optimum speed of the heating of certain bodies.  
Izv. vys. ucheb. zav.; energ. 4 no.11:77-83 N '61. (MIRA 14:12)

1. Khar'kovskiy politekhnicheskii institut imeni V.I.Lenina.  
Predstavlena kafedroy otshchey teplotekhniki.  
(Heat--Transmission)

S/124/62/000/008/026/030  
1054/1254

AUTHOR: Shevelev, A.A.

TITLE: Temperature induced stresses in plates at non-symmetrical heating

PERIODICAL: Referativnyy zhurnal, Mekhanika, Svodnyy tom. no. 8V, 1962, 16,  
abstract 8V 114 (Tr. Kharkovsk. politokhn. in-ta, v. 36, 1961,  
145-150)

TEXT: The distribution of temperature-induced stresses are considered in a non-symmetrically heated plate. The ambient temperature on one side of the plate changes at the starting moment suddenly to a constant value, and on the other side of the plate the temperature changes with time according to a given law. The heat transfer from the plate surfaces to the ambient follows the laws of convection. Cases are considered when the ambient temperature changes linearly and exponentially with time.

[Abstracter's note: Complete translation.]

Card 1/1

SHEVELEV, A. A. (Kharkov polytechnical institute)

"The problem of non-stationary thermal capacity in two-layered plate under marginal conditions of a third type."

Report presented at the Section on Thermal-physical Properties and Non-stationary Thermal Capacity, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

1. 41116-65 EWT(m)/EWF(w)/FPR EM  
ACCESSION NR: AP5005767

S/0170/65/008/001/0079/0081

AUTHOR: Shevelev, A. A.

TITLE: Temperature stresses in a plate and choice of optimal heating rate

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 8, no. 1, 1965, 79-81

TOPIC TAGS: thermal stress, heating rate, temperature stress, Biot number, Predvoditelev number

SUMMARY: The temperature stresses in an infinite plate were investigated for the case when the temperature of the medium varies exponentially with the time (condition of the third kind). A connection is established between the maximum temperature stresses and the Biot (Bi) and Predvoditelev (Pd) numbers. The results show that the maximum tension stresses occur on one surface and the maximum compression stresses on the other. In the case of heating the signs of the stresses are reversed. The results show also that with increasing Pd and Bi numbers the maximum stress increases, and when these numbers become infinite, the relative stress becomes equal to unity, meaning that the stress is determined by the difference between the initial temperature of the body and the maximum temperature.

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ACCESSION NR: AP5005767

of the medium. The dependence of the Fourier number ( $Fo$ ) on the Biot and Predvoditelev numbers is also determined and it is shown that for heating with maximum intensity ( $Bi$  infinite) at a constant temperature, the maximum stress does not set in immediately but depends on  $Pd$ . A numerical example is given. The relations derived can be used to determine the optimum heating rate or to estimate the maximum stress. Orig. art. has: 1 figure and 4 formulas.

ASSOCIATION: Politekhnikheskiy institut im. V. I. Lenina, Khar'kov (Polytechnic Institute)

SUBMITTED: 07Apr64

ENCL: 00

SUB CODE: ME, TD

NR REF SOV: 001

OTHER: 001

*am*  
Card 2/2



SHEVELEV, A.A.

Thermal stresses in a plate and selection of optimum heating conditions. Inzh.-fiz. zhur. 8 no.1:79-81 Ja '65.

(MIRA 18:3)

1. Politekhnikheskiy institut imeni Lenina, Khar'kov.

SHEVELEV, A.A. (Khar'kov)

Thermal stresses in a plate and cylinder heated under variable  
medium temperature conditions. Prikl. mekh. 1 no.11:119-126 '65.

(MIRA 19:1)

1. Khar'kovskiy politekhnicheskii institut. Submitted Oct. 10,  
1964.

L 38492-66 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWP(v)/EWP(k) IJP(c) WW/EM  
 ACC NR: AP6017826 (N) SOURCE CODE: UR/0147/66/000/002/0044/0048  
 AUTHOR: Shevelev, A. A. 48  
 ORG: none 3  
 TITLE: Temperature stresses in a cylinder and choice of optimum heating conditions 2  
 SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 2, 1966, 44-48  
 TOPIC TAGS: temperature stress, Poisson coefficient, elastic modulus, thermal expansion, heating  
 ABSTRACT: The temperature stresses in a cylinder of radius R are determined by the expressions  

$$\sigma_r = \frac{\beta E}{1-\nu} \left[ \frac{1}{R^2} \int_0^R t(r, \tau) r dr - \frac{1}{r^2} \int_0^r t(r, \tau) r dr \right], \quad (1)$$

$$\sigma_\theta = \frac{\beta E}{1-\nu} \left[ \frac{1}{R^2} \int_0^R t(r, \tau) r dr + \frac{1}{r^2} \int_0^r t(r, \tau) r dr - t(r, \tau) \right], \quad (2)$$

$$\sigma_z = \frac{\beta E}{1-\nu} \left[ \frac{2}{R^2} \int_0^R t(r, \tau) r dr - t(r, \tau) \right], \quad (3)$$
 UDC: 539.3  
 Card 1/2

L 38492-66

ACC NR: AP6017826

where  $\beta$  is the coefficient of linear expansion; E is the elastic modulus;  $\nu$  is the Poisson coefficient. The remainder of the article consists in a mathematical solution of the problem based on the above premises. Orig. art. has: 11 formulas and 3 figures.

SUB CODE: 20,12/ SUBM DATE: 08Oct65/ ORIG REF: 003/ OTH REF: 001

Card 2/2  $\Sigma$

L 01294-67 EWT(1)  
ACC NR: AP6015031

(A)

SOURCE CODE: UR/0144/66/000/004/0420/0429

AUTHOR: Yakovenko, V. A.; Shevelev, A. A.

ORG: none

33  
B

TITLE: Investigation of the magnetic flux in the steel of d-c machines at pulsating supply voltage

29

SOURCE: IVUZ. Elektromekhanika, no. 4, 1966, 420-429

TOPIC TAGS: electric machine, d-c machine, magnetic circuit, *electric device, steel*

ABSTRACT: A theoretical and experimental investigation is reported of B, H,  $\mu$ , and losses in solid and laminated steel structures whose windings are supplied with a pulsating-voltage energy. The problem was investigated by R. O. Carter et al. (Proc. IEE, v. 95, no. 56, p. 11, 1950); however, the present article adapts the results to pulsating-voltage-fed motors. The B/H curve is analyzed, and formulas for losses are developed. Experimental results obtained with toroidal cores ID = 160 mm, OD = 220 mm, 30-mm thick are presented; five cores were tested: solid, 5-mm laminations, 2-mm laminations, 0.8-mm laminations, and 0.75-mm

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UDC: 621.318.3+621.3.022

L 01294-67

ACC NR: AP6015031

laminations. Plots of loss vs. ripple factor, loss vs. degree of lamination, and  $\alpha$  vs. ripple factor ( $\alpha$  is the phase angle between the current and magnetic flux) are shown. Findings: (1) In d-c pulsating-voltage-supplied motors, additional steel loss increases with the ripple factor; however, the solid portions of the magnetic circuit reduce the above effect; (2) The losses caused by the higher harmonics of the pulsating flux must be taken into account; (3) The lag angle of the flux a-c component under sustained conditions, and of the total flux, under transient conditions, largely depends on the degree of lamination; a completely laminated magnetic circuit is recommended for d-c pulsating-voltage-supplied motors. Orig. art. has: 7 figures and 32 formulas.

SUB CODE: 09 / SUBM DATE: 19Jul65 / ORIG REF: 006 / OTH REF: 001

Card 2/2 *LC*

SHCHEVLEV, A. B.

37552. Meditsinskaya Geografiya Kak Metod Izucheniya Sanitarnogo Sostoyaniya Naseleniya. V SB: XII Vsesoyuz. Gigiyenistov, Epidemiologov, Mikrobiologov, i Infektsionistov. T. I. M., 1949 s. 355-56.

SO: Letopis' Zhurnal'nykh Statey, Vol. 37, 149

*Shevelev, A.B.*

ASHURKOV, Ye.D.; SHEVELEV, A.B.

Responsibility of scientists in public health organization.  
Sov. zdrav. 16 no.2:3-8 F '57 (MLRA 10:4)

1. Iz Instituta organizatsii zdravookhraneniya i istorii meditsiny  
imeni N.A. Semashko Ministerstva zdravookhraneniya SSSR.  
(PUBLIC HEALTH  
in Russia)



SHEVELEV, A.B.

"Public health in the U.S.S.R." by N.A.Vinogradov. Reviewed by  
A.B.Shevelev. Sov.zdrav. 16 no.12:55-57 D '57. (MIRA 11:1)  
(PUBLIC HEALTH) (VINOGRADOV, N.A.)

SHEVELEV, A.B.; YERSHOV, V.S.; MAYSTRAKH, K.V., red.; SENCHILO, K.K.,  
tekhn.red.

[Safeguarding the health of the Soviet population] Okhrana  
zdorov'ia naseleniia v SSSR. Moskva, Medgiz, 1959. 36 p.  
(MIRA 13:3)  
(PUBLIC HEALTH)

ASHURKOV, Ye.D., kand.med.nauk; SHEVELEV, A.B., kand.med.nauk

V.I.Lenin and the development of socialist theory of public health.  
Vest.AMN SSSR 15 no.4:11-17 '60. (MIRA 14:5)

1. Institut organizatsii zdravookhraneniya i istorii meditsiny imeni  
N.A.Semashko.

(PUBLIC HEALTH)

ASHURKOV, Ye.D.; SHEVELEV, A.B.; DANYUSHEVSKIY, S.M. (Moskva)

Coordination of scientific research relating to public health in  
socialist countries. Sov. zdrav. 19 no. 8:6-13 '60.

(MIRA 13:10)

1. Iz Instituta organizatsii zdravookhraneniya i sitorii meditsiny  
imeni N.A. Semashko Ministerstva zdravookhraneniya SSSR.

(PUBLIC HEALTH RESEARCH)

SHEVELEV, A.B. (Moskva)

Basic methodological problems in public health research. Sov.  
zdrav. 20 no.10:33-41 '61. (MIRA 14:9)

1. Iz Instituta organizatsii zdravookhraneniya i istorii meditsiny  
imeni N.A.Semashko.  
(PUBLIC HEALTH RESEARCH)

DUDAREV, K.N.; SHEVELEV, A.G.

Work of meat, milk, and food control stations in Vilnius.

Veterinariia 39 no.8:55-57 Ag '62.

(MIRA 17:12)

SHEVELEV, A. G.

"Concerning some General Features of Invariance  
Theory and Statistical Theory."

paper presented at the First International Congress of the International  
Federation On Automatic Control (IFAC), Moscow, 27 June - July 1960.

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S/569/61/001/000/010/019  
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16,8000 (1031, 1132, 1103)

AUTHOR: ~~Shevelev, A. G.~~ (USSR)

TITLE: On some common features of invariance theory and statistical theory (As a supplement to the reports by V. S. Kulebakin and B. N. Petrov)

SOURCE: International Federation of Automatic Control. 1st Congress, Moscow, 1960. Teoriya nepreryvnykh sistem. Spetsial'nyye matematicheskiye problemy. Moscow, Izd-vo AN SSSR, 1961. Trudy, v. 1, 276-281

TEXT: It can be shown that invariance theory and statistical theory lead to the same result when considered as methods for synthesizing control systems. The system

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S/589/61/001/000/010/019  
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On some common features...

$$p_{22}p_{33} - n_{23}n_{32} = 0, \quad (3)$$

then  $x$  is not affected by the external disturbance. It can be shown that, if Eq. (3) holds, the controller has infinite gain for all frequencies:

$$W_{\text{cont}}(s) = \frac{\frac{n_{32}}{p_{22}p_{33}}}{1 - \frac{n_{32}}{p_{22}p_{33}} n_{23}} = \frac{n_{32}}{p_{22}p_{33} - n_{23}n_{32}} \quad (4)$$

for

$$p_{22}p_{33} - n_{23}n_{32} = 0 \quad W_{\text{cont}}(s) = \infty. \quad (5)$$

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where  $s = \alpha + j/\omega$  is a complex quantity and  $W(s)$  is the transfer function which satisfies the mean-square error. For the transfer function of the controller, one obtains

$$W_{\text{cont}}(s) = U(s)B(s) = \frac{W(s)B(s)}{1 - W(s)B(s)C(s)} = \infty. \quad (12)$$

Eqs. (12) and (5) coincide. It is noted that in practice it is difficult to realize the transfer function expressed by Eqs. (5) and (12). Academician V. S. Kulebakin obtained the conditions of realizability in the case of combined control systems. He and Professor Ivakhnenko formulated 4 invariance conditions for such systems. As the second condition is of peculiar interest, it is briefly considered below. By transforming Eq. (1), one obtains for  $x$  the expression

$$x = \frac{n_{13} \sqrt{p_{22}p_{33} + K(s)n_{32}}}{p_{11}p_{22}p_{33} + n_{12}n_{21}n_{32}} F(s). \quad (14)$$

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On some common features...

Hence, it follows that by appropriate choice of the operator  $K(s)$  the plant parameter can be made independent of the disturbance  $F(s)$ . The operator  $K$  is given by

$$K(s) = - \frac{p_{22}p_{33}}{a_{32}} = - \frac{1}{w_{cont}(s)} \quad (15)$$

and can be realized in practice. Further, this operator is derived by statistical methods from the minimum condition of the mean-square error due to the disturbance, assuming the disturbances to be probability functions. The dispersion is

$$\sigma(t) = \lim_{T \rightarrow \infty} \frac{1}{2T} \int_{-T}^T [\varphi(t) - x_0 - (x_2 - x_1)]^2 dt, \quad (18)$$

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On some common features...

sion that the transfer function of a system, obtained by invariance theory,  
is optimal by the mean-square error criterion. There are 5 figures.

X

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SHEVELEV, A.G.

S/102/61/000/002/001/005  
D251/D302

16.8000

AUTHOR:

Shev~~el~~ev, A.G. (Kyyiv)

TITLE:

On the equivalence of the transfer function of automatic control systems and the optimum transfer function obtained from the condition of the minimum mean square error for a certain class of automatic control systems

PERIODICAL: Avtomatyka, no. 2, 1961, 3 - 8

TEXT: The author considers stabilization systems with stationary action given by the statistical methods described by Viner, Zade-Ragazzini, Buton, Solodovnikov, Matvyeyev, etc. Using the compensation theory, described by G.V. Shchypanov, V.S. Kulebakin, et al., the author shows that the synthesis of the transfer function of such a system by means of the invariance principle, and on the basis of the minimum mean square error will lead to the same result. Hence, it is concluded that the transfer function of an automatic control system under conditions of invariance is an optimum func-

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SHEVELEV, A. G.

S/102/61/000/006/004/004  
D299/D305

13,2000

AUTHOR: Shevelyev, A. H. (Kyyiv)

TITLE: Invariance theory and minimum mean-square error for combined control systems

PERIODICAL: Avtomatyka, no. 6, 1961, 70-74

TEXT: The invariance conditions for combined (tandem) control systems were formulated by Academician V. S. Kulebakin and by Professor O. H. Ivakhnenko. The system under consideration is represented in Fig. 1. The solution of the system equations is

$$x(s) = \frac{[a_{11}] \delta_1 + [a_{21}] \delta_2}{[a]} \cdot F(s) \quad (2)$$

where  $[a_{ij}]$  is the algebraic complement of the principal determinant of the system of equations. By the second invariance condition  
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Invariance theory and ...

Analyzing Eqs. (2) and (4), the conclusion is reached that the more accurate equality (5) is fulfilled, the less the system responds to the disturbance  $F(s)$ , and the less the control error. It can be shown that thereby the system will be optimal with respect to the minimum mean-square error under statistical stationary disturbances. Denoting

$$\frac{a_{32}}{a_{22}a_{33}} = A(s), \quad \frac{a_{13}}{a_{11}} = B(s), \quad a_{21} = 1 \quad (6)$$

it is possible to simplify the configuration represented in Fig. 1. After computations, one obtains an expression for the dispersion  $\sigma(t)$ , involving a functional. Thereupon, the minimum of the functional is obtained by variation of the sought function  $\delta(t)$ . The minimum condition for the dispersion is

$$\left[ \frac{\partial}{\partial \alpha} (\sigma + d\sigma) \right]_{\alpha=0} = 0 \quad (12)$$

Card 3/8

Invariance theory and ...

31927  
S/102/61/000/006/004/004  
D299/D305

this equation is solved by means of the complex variable  $s = \theta + j\omega$ . Its solution yields

$$D(s) = - \frac{1}{A(s)} \quad (21)$$

where  $A(s)$  is the transfer function of the controller. The conclusions are that stabilization of combined control systems under invariance conditions with respect to statistical stationary disturbances is optimal by the mean-square error criterion. System synthesis should be based on invariance theory, as its mathematical apparatus is simpler than that of the statistical theory. There are 3 figures and 4 Soviet-bloc references. x

SUBMITTED: September 10, 1960

Card 5/8



SHEVELEV, A.G. [Shevchuk, A.H.] (Kiyev)

Invariance theory and minimum mean square error for systems of combined  
control. Avtomatyka no.6:70-75 '61. (MIRA 14:12)  
(Automatic control)

SHEVELEV, Anatoliy Grigor'yevich, starshiy prepodavatel'

Invariancy principle for multidimensional automatic control  
systems. Izv. vys. ucheb. zav.; elektromekh. 5 no.6:622-631  
'62. (MIRA 15:10)

1. Kiyevskiy institut Grazhdanskogo vozdušnogo flota.

(Automatic control)

I 9733-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) LJP(c) GS  
 ACC NR: AT5028936 SOURCE CODE: UR/0000/65/000/000/0098/0112

44, 55  
 AUTHOR: Kukhtenko, A. I.; Shevelev, A. G.

ORG: none

TITLE: On the class of automatic control systems invariant with respect to variation of parameters

SOURCE: AN UkrSSR. Slozhnyye sistemy upravleniya (Complex control systems). Kiev, Naukova dumka, 1965, 98-112

16, 44, 55  
 TOPIC TAGS: automatic control, sensitivity theory, invariance theory, self adaptive control, *automatic control system, parameter, function*

ABSTRACT: The problem of designing a dynamic system which would be insensitive to variation of its parameters is analyzed. It is indicated that although self-adapting systems in which the dynamic properties of the system remain unchanged with variation of its parameters are this kind of systems, theoretical studies and design of such systems are highly complex problems. Therefore, the author raises the question of whether it is possible to construct systems which have the characteristics of self-adaptive systems and are free of their shortcomings. The possibility of designing such systems is analyzed by using the methods of sensitivity theory and the methods of invariance theory. On the basis of the derived sensitivity equations and using invariance criteria, it is shown that in certain cases it is possible to design a

Card 1/2

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ACC NR: AT5028936

dynamic system which is insensitive to variations of its parameters. The possibility of designing such invariant systems is illustrated by two examples: 1) the system is described by a system of four equations whose two coefficients  $a_2(t)$  and  $k_2(t)$  are considered as arbitrarily varying functions within certain given bounds; 2) an airplane autopilot system. Orig. art. has: 4 figures and 29 formulas. [LK]

SUB CODE: 13, 12 / SUBM DATE: 03Aug65/ ORIG REF: 007/ OTH REF: 001/ ATD PRESS: -4157

Card 2/2

KLYUCHEROVA, V.I., tekhnik-elektrik; SHEVELEV, A.I., tekhnik-elektrik.

Work record for kilns at the Sukhoi Log Cement plant. TSement  
22 no.3:29 My-Je '56. (MLRA 9:8)

1. Sukholozhskiy tsementnyy zavod.  
(Sukhoi Log--Kilns, Rotary)

SHEVELEV, A.G., pensioner

Shock worker of communist labor. Put' i put.khoz. 6 no.2:46  
'62. (MIRA 15:2)

1. Redaktor stengazety "Puteyets", g. Pervomaysk.  
(Railroads--Employees)

SHEVELEV, A.G. [Sheveliev, A.H.], kand.istor.nauk

Some problems relating to the growing number of machines and workers in the machine-tractor stations of the Ukrainian S.S.R. during the fourth five-year plan. Nauk.zap.Kyiv.inzh.-bud.inst. no.1:100-119 '59. (MIRA 15:7)

(Ukraine--Machine-tractor stations)

SOV/113-58-12-2/17

AUTHORS: Shevelev, A.G., Candidate of Economic Sciences, and Pre-obrazhenskaya, N.S.

TITLE: Problems of the Economy of the Automobile Industry (Voprosy ekonomiki avtomobil'noy promyshlennosti)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 12, pp 1-5 (USSR)

ABSTRACT: In the next 7 years, 700 complex automatic lines will be put into operation in the Soviet automobile industry. Since 1940 productivity has increased nearly 3 times (Table 1). In the Moskovskiy avtozavod imeni Likhacheva (Moscow Automobile Plant imeni Likhachev) 0.51 m of conveyers are operating per worker, whereas in the British firm Austin 2.3 m per worker are in use. The prime cost of Soviet motorcar production has been reduced in the last years, but there are still large reserves, as shown in Table 2. The percentage of the various materials in the prime cost of two automobile types is given in Table 4. The ratio between the weight of the truck and its carrying capacity is still behind that of foreign trucks. In Mercedes Benz 321/36 it is 0.62 (Table 5), in the Soviet truck GAZ-51A it is 1.0, but improvements are being made. The use of waste products can be improved

Card 1/2



Problems of the Economy of the Automobile Industry SOV/113-58-12-2/17

considerably, e.g. the use of metal chips by briquetting (Table 6). The expenditure for tools has been reduced in the last years which lowered also the prime cost (Table 7). There are 7 tables.

ASSOCIATION: NIITavtoprom

Card 2/2

ZYBAYLO, Aleksey Vasil'yevich; SHEVELEV, A.G., inzh., retsenzent; LEVIN-  
SON, Ye.M., inzh., red.; ~~KADAYEVA, Z.A.~~, red. izd-va; EL'KIND, V.D.,  
tekh. red.

[Organizing preliminary activities in the mass manufacture of machinery]  
Organizatsiia podgotovki proizvodstva v massovom mashinostroenii. Mo-  
skva, Gos. nauchno-tekh. izd-vo mashinostroit. lit-ry, 1961. 234 p.  
(MIRA 14:9)

(Factory management)

BYALKOVSKAYA, Vera Sergeyevna; MANSUROV, A.M., inzh., retsenzent;  
SHEVELEV, A.G., inzh. retsenzent; SALYANSKIY, A.A., red.  
izd-va; DOBRITSYNA, R.I., tekhn. red.

[Main directions of specialization in forging] Osnovnye na-  
pravleniia spetsializatsii kuznechnogo proizvodstva. Moskva,  
Mashgiz, 1961. 108 p. (MIRA 15:2)  
(Forge shops)

SHEVELEV, A. G. (Veterinary Doctor, Chikmansk Sovkhoz, Chylymak District).

"Treated successfully 107 cases of kerato-conjunctivitis with a tissue biostimulant...

Veterinariya, vol. 39, no. 8, August 1962 pp. 54

DUDAREV, K. N. and SHEVELEV, A. G.

"Work of Meat-and-Dairy and Food Control stations in Vilna [Lithuania]"

Veterinariya, vol. 39, no. 8, August 1962, p. 55

BARTASHEV, L.V.; TILLES, S.A., kand. tekhn. nauk, retsenzent  
[deceased]; SHEVELEV, A.G., inzh., retsenzent; KOL'DERTSOV,  
M.S., inzh., red.; TIKHANOV, A.Ya., tekhn. red.

[Technical and economic calculations in designing and  
manufacturing machinery] Tekhniko-ekonomicheskie raschety  
pri proektirovanii i proizvodstve mashin. Moskva, Mashgiz,  
1963. 303 p. (MIRA 16:7)  
(Machinery--Design and construction)

ACCESSION NR: AT5004120

S/0000/64/000/000/0220/0230

59  
B+1

AUTHOR: Shevelev, A. G.

TITLE: Stabilization of the coordinates of an airplane under conditions of flight in a turbulent atmosphere

SOURCE: Vsesoyuznoye soveshchaniye po teorii invariantnosti i yeye primeneniyu v avtomaticheskikh sistemakh. 2d, Kiev, 1962. Teoriya invariantnosti v sistemakh upravleniya (The theory of invariance in automatic control systems); 1962 soveshchaniya. Moscow, Izd-vo NaKA, 1964. 220-230

TOPIC TAGS: flight stability, control theory, invariance, invariant system, autopilot, aircraft stabilization, atmospheric turbulence

ABSTRACT: The paper applies the theory of invariance to the problem of designing an autopilot system for an airplane, which is capable of compensating for the perturbations brought about by flight in a turbulent atmosphere. Part I considers the use of combinatorial control systems as stabilizing mechanisms. The problems of stabilizing against vertical air current ( $W$ ) and horizontal air current ( $U_x$ ) are treated separately. Using known equations, invariant control systems are designed. A similar pattern is followed in part II where deviational systems

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36725-65

ACCESSION NR: AT5004120

are considered. Finally, the stability properties of the synthesized systems are investigated. Orig. art. has: 5 figures and 40 formulas.

ASSOCIATION: None

SUBMITTED: 24Sep64

ENCL: 00

SUB CODE: AC, NG

NO REF SOV: 003

OTHER: 000

Card 2/2



**SHEVELEV, A.K.**

**3**

ON THE INFLUENCE OF THE CONDITIONS OF ELECTROCRYSTALLIZATION OF THE STRUCTURE OF ZINC DEPOSITS, A. K. SHEVELEV (ZHUR. T. EKHN. PIZIKI, 1948, 16, (11), 1299-1306)--(In Russian) The direction of the (103) plane was determined for deposits from the cyanide bath without any special additions and from the zincate vate containing additions of tin; the (105) orientation was found for deposits from the acid bath containin no additions. The factors influencing the formation of the texture were established. N.A.

*Gov'kij Physico-Tech. Inst.*

ASB-51.4 METALLURGICAL LITERATURE CLASSIFICATION

122

SHEVELEV, A.K.

11

1. Influence of Boron on the Structure of High Speed Steel. (in Russian.) A. K. Shevelev. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 18, Jan. 1948, p. 99-104.

Addition of boron contributes to the retaining of residual austenite in tempered steel, the amount of which increases with boron content. Further more, the addition of boron contributes to the re-grouping of carbides: the amount of C.C. in carbides with increasing boron content, but Fe.W.C decreases. The formation of a solid solution of alpha-iron with boron was not established.

18(3)  
AUTHOR:

Shevelev, A. K.

SOV/20-123-3-20/54

TITLE:

On the Nature of the Solid Solution of Boron in Alpha-Iron  
(O prirode tverdogo rastvora bora v al'fa-zheleze)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 3, pp 453-456  
(USSR)

ABSTRACT:

The author first compares various earlier papers dealing with this subject. In the present paper the period and the density of the crystal lattice is determined in an iron alloy containing boron. The chemical composition of this alloy corresponds to the single-phase domain of the solid solution. The 10.10.10 mm samples of the alloy were investigated in an annealed and in a quenched state. The  $\alpha$ -iron crystal lattice constant was determined radiographically as a function of the boron content. The relative variation of the lattice constant furnishes very accurate results if this method is applied. Data obtained by measurements and calculations of the  $\alpha$ -iron lattice constant as functions of the boron content are given in a table. If boron is dissolved in  $\alpha$ -iron, the lattice constant becomes smaller by 0.005 Å per percentage by weight or 0.001 Å per 1 gram-atomic percentage.

Card 1/3

On the Nature of the Solid Solution of Boron in  
Alpha-Iron

SOV/20-123-3-20/54

In the annealed samples the decrease of the lattice constant does not depend on the boron content of the alloy, and consequently the solubility of boron in these samples was equal to or lower than the boron content in the alloy. The boron surplus produces a small quantity of the second phase  $Fe_2 B$ , which is separated mainly on the boundaries of the grain. The solubility of boron in the annealed samples amounted to never more than 0.04%. From radiographical data the density of the alloy for solid penetration-solutions and for solid equivalent (substitution) solutions was calculated. The density of the iron-boron alloy corresponds to that of a solid equivalent (substitution) solution. Geometrical calculations, the decrease of the lattice constant and of the density of the alloy, and the variation of interference line intensity observed on the X-ray pictures show that in the case of dissolution in  $\alpha$ -iron, a solid equivalent (substitution) solution is formed. There are 5 tables and 11 references, 5 of which are Soviet.

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On the Nature of the Solid Solution of Boron in  
Alpha-Iron

SOV/20-123-3-20/54

"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001549220002

ASSOCIATION: Gor'kovskiy issledovatel'skiy fiziko-tekhnicheskiy institut  
Gor'kovskogo gosudarstvennogo universiteta im. N. I. Lobachevskogo  
(Gor'kiy Physico-Technical Research Institute of Gor'kiy State  
University imeni N. I. Lobachevskiy)

PRESENTED: June 21, 1958, by N. V. Belov, Academician

SUBMITTED: June 10, 1958

Card 3/3

SOV/70-4-2-22/36  
A Camera for Taking X-ray Diffraction Photographs at Low and High  
Temperatures (TRK)

There are 2 figures and 3 Soviet references.

ASSOCIATION: Issledovatel'skiy fiziko--tekhnicheskiy institut pri  
Gor'kovskom gosudarstvennom universitete imeni  
N. I. Lobachevskogo (Gor'kiy Physico-technical Research State  
University im. N.I. Lobachevsky)

SUBMITTED: December 16, 1958

Card 2/2

ACC NR: AP6033048

SOURCE CODE: UR/0126/66/022/002/0210/0214

AUTHOR: Shevelev, A. K.

ORG: None

TITLE: Fine crystalline structure and characteristic temperatures of  $\alpha$ -iron alloyed with boron

SOURCE: Fizika i metallov i metallovedeniye, v. 22, no. 2, 1966, 210-214

TOPIC TAGS: crystal structure, fine structures, iron base alloy, boron containing alloy, x ray analysis

ABSTRACT: The author studies the fine crystal structure and characteristic temperature of  $\alpha$ -iron alloyed with boron. The alloys studied were melted in an induction furnace. These alloys were subjected after slow cooling to additional annealing at 880°C for 4 hours. The specimens for hardness testing were prepared in microsection form while powder specimens were used for studying block structure and microstresses by x-ray analysis. Cylindrical specimens were used for determining characteristic temperature. Characteristic temperature of the specimens was determined by x-raying them in a special chamber at 295 and 123°K using Mo-radiation. The Vickers unit was used for measuring hardness under a 20 kg force. The results of the study show that the addition of 1 ct% of boron increases hardness of annealed iron by a factor of 2

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UDC: 620.183.48

ACC NR: AP6033048

and quenched iron by a factor of 5. The strengthening of  $\alpha$ -iron is explained by a change in the fine crystal structure in solid solution and by the formation of a second  $\text{Fe}_2\text{B}$  phase. These factors reinforce each other. Strengthening during quenching is due chiefly to a reduction in the size of coherent scattering regions to  $2-3 \cdot 10^{-6}$  cm. Orig. art. has: 2 figures.

SUB CODE: 11/ SUBM DATE: 05Jul65/ ORIG REF: 024/ OTH REF: 001  
20/

Card 2/2

SOV/6-60-1-3/17

3(4)  
AUTHORS:

Genike, A. A., Shevelev, A. P.

TITLE:

The <sup>12C</sup>Tellurometer and the Results of Its Examination by the  
TsNIIGAIK (Central Scientific Research Institute of Geodesy,  
Aerial Surveying and Cartography)

PERIODICAL:

Geodeziya i kartografiya, 1960, Nr 1, pp 17-28 (USSR)

ABSTRACT:

The present paper first describes the mode of operation of the tellurometer developed by T. D. Uodli in the Union of South Africa in 1957. It is a phase radar distance meter measuring the phase difference at the beat frequency. It is pointed out that the principle of such a radar distance meter had already been suggested in 1930 by L. I. Mandel'shtam and N. D. Paleksi (Ref, Footnote p 19). This radar distance meter was called incoherent phase distance meter. Its circuit diagram is shown and explained by figure 1. Then, the simplified diagram of the tellurometer is shown in figure 2, and the mode of operation, the measuring method, and the evaluation of observation results, are described. In September 1959, the TsNIIGAIK (Central Scientific Research Institute of Geodesy, Aerial Surveying and Cartography) acquired a tellurometer and

Card 1/2



SHEVELEV, A. P.

AUTHORS: Larin, B. A., Candidate of Technical Sciences, Masarov, V. M., Candidate of Technical Sciences, Prilepin, M. T., Candidate of Technical Sciences, Antin, I. I., Candidate of Technical Sciences, Gonko, A. A., Lashov, P. Ye., Mikhaylov, Y. M., Shevelev, A. P. 3/006/60/000/04/018/019 3007/0005

TITLE: On the Book by A. V. Kondrashkov, "Electrooptical Range Finders"

PERIODICAL: Geodesiya i kartografiya, 1960, Nr 4, pp 75-76 (USSR)

TEXT: This is a review of the book by A. V. Kondrashkov (Ref, Footnote on p 75) published in 1959. It is thoroughly discussed as far as it first tries to generalize and systematize the data required for optical range finders. The book consists of two parts. The first part (60% of the volume) gives data from physics, radio engineering, electrical engineering, and electronics. The second part deals with problems directly connected with optical range finders. The incoherent data of varying level on the fields mentioned in the first part are too extensive and inconvenient. The division and mode of representation of these chapters is also a failure. The theory of optical range finders is not well explained. Several concrete mistakes of the book are pointed out. The great number of such mistakes

Card 1/2

reduces the value of the book considerably. It is regretted that the editor of the book Yu. V. Popov paid his principal attention to the title, not to the contents of the book, as can be seen from the introduction. There is 1 Soviet reference.

Card 2/2

LARIN, B.A., kand.tekhn.nauk; NAZAROV, V.M., kand.tekhn.nauk; PRILEPIN, M.T.,  
kand.tekhn.nauk; ENTIN, I.I., kand.tekhn.nauk; GENIKE, A.A.;  
LAZANOV, P.Ye.; MIKAYLOV, V.S.; SHEVELEV, A.P.

On A.V. Kondrashkov's book "Electrooptical range finders." Geod.  
i kart. no.4:73-76 Ap '60. (MIRA 13:8)  
(Range finders) (Kondrashkov, A.V.)

SHEVCHEN, A.P.

~~SHEVCHEN, A.P.~~

Methods of increasing labor productivity in prefabricated construction.  
Gor.khoz.Mosk. 31 no.7:8-11 J1 '57. (MIRA 10:9)  
(Building)

SHEVELEV, A.P., inzh.

Analyzing labor expenditures in the construction industry. Biul.  
stroitel. tekhn. 15 no. 7:15-19 J1 '58. (MIRA 11:7)

1. Nauchno-issledovatel'skiy institut sel'skogo stroitel'stva.  
(Building--Estimates)

BOGUSHEVICH, Ye.N. (Moscow); ~~SHENYALOV, A.P.~~ (Moscow); BORTNIKOV, V.B.  
(Kishinev); NECHAYEV, G.A. (Leningrad); KARAKOV, I.I. (Kiyev);  
KLOPOTOVSKIY, I.S. (Leningrad); GALAKHOV, G.K.; POSYSAYEV, H.S.  
(Moscow).

Discussion on methods for determining the coefficient of prefabrication in construction. Stroit. prom. 36 no.6:38-45 Je '58.  
(Precast concrete construction) (MIRA 11:6)

SHEVELEV, Aleksey Petrovich; KUZNETSOV, P.V., red.; YERMILOV, N.G.,  
spetsred.; PONOMAREVA, A.A., tekhn.red.

[Precast construction and its economic effectiveness] Sbornoe  
stroitel'stvo i ego ekonomicheskaya effektivnost'. Moskva,  
Gosplanizdat, 1960. 157 p. (MIRA 13:7)  
(Precast concrete construction)

PEKAREVA, N.A., kand.arkhitektury; SNEVELEV, A.P., arkhitektor

Creative path of Pavel Vasil'evich Abrosimovich. Izv.  
ASIA no.2:134-136 '61. (MIRA 15:1)  
(Abrosimovich, Pavel Vasil'evich, 1900-)

GENDEL', E.M.; SHEVELEV, A.P.

Specific cost of foundations in relation to the number of stories  
and the distance of the transportation of building materials.  
Osn. fund. i mekh. gruz. 6 no.4:22-23 '64. (MIRA 17:12)



SHEVELEV, Aleksey Petrovich

[Organization and planning of rural construction] Orga-  
nizatsiia i planirovanie sel'skogo stroitel'stva. Mo-  
skva, Stroiizdat, 1965. 79 p. (MIRA 18:7)

SHENDRIK, M.N., Cand Tech Sci—(diss) " <sup>Industrial</sup> ~~Commercial~~ method of dehydration of ethylbenzene into styrene, and isopropylbenzene into alpha-methylstyrene in an adiabatic reactor." Mos, 1958. 12 pp with graphs; 1 sheet of graphs (Min of Chemical Industry of the USSR. State Inst of <sup>for the Planning of</sup> ~~the~~ "Rubber Industry"), <sup>(Plants)</sup>  
170 copies (KL, 30-58, 129)

-101-

24(8),25(5)

AUTHORS:

Shendrik, M. N., Boreskov, G. K.

SOV/64-59-3-12/24

TITLE:

Calculation of an Adiabatic Reactor for Endothermic Processes  
(Raschet adiabaticheskogo reaktora dlya endotermicheskikh protsessov)

PERIODICAL:

Khimicheskaya promyshlennost', 1959, Nr 3, pp 55-57 (USSR)

ABSTRACT:

Since a number of endothermic processes recently has been carried out in industry by means of adiabatic reactors (for instance producing divinyl of butylene, styrene of ethyl benzene and alcohols of esters), the development of a method for calculating these reactors is of special interest. A graphic method was developed, based upon the general method for the computation of the catalyst volume with which exothermic, reversible reactions take place. It was found that the task lies mainly in the definition of the quantity  $\tau$  ( $\tau$  - fictitious contact time) in seconds, according to the equation (1). Isotherms are given for the dehydration of isopropylbenzene which represent the function of the degree of transformation  $\alpha$  of  $\tau$  (Fig 1), carried out in the Ciprokauchuk. The temperature function  $t$  of  $\alpha$  for the process mentioned above, computed according to an equation (4), is also represented

Card 1/2

Calculation of an Adiabatic Reactor for  
Endothermic Processes

SOV/64-59-3-12/24

graphically (Fig 2). The graphic method of definition is also represented in the same example (dehydration of isopropyl-

benzene) by means of a diagram  $\frac{d\tau}{d\alpha} - \alpha$  (Fig 3). It is pointed out that the change of the catalyst activity has to be considered, and therefore the value computed for  $\tau$  has to be multiplied by the coefficient 1.15. The dehydration of isopropylbenzene was also examined on a large scale (Ref 4). Conditions and some results are given (Table). There are 3 figures, 1 table, and 4 references, 3 of which are Soviet.

Card 2/2

SHEVCHUK, M. N.

807/5155

PHASE I BOOK EVALUATION

Garmov, I.V., and B. S. Korotkevich, Resp. eds.

Sintez monomernykh dlya proizvodstva sinteticheskogo kauchuka (Synthesis of Monomers for the Production of Synthetic Rubber) Leningrad, Gostkhizdat, 1950. 290 p. Krutaya alip inserted. 4,500 copies printed.

Sponsoring Agencies: Gosudarstvennyy komitet Sovetskogo Ministrov SSSR. Oprevedeniye iz 1 mifobinski. Oprevedeniye iz 1 mifobinski.

Eds.: S.A. Zaitseva and Ye. I. Shur; Tech. Eds.: T.A. Pomtina.

PURPOSE: This book is intended for scientists, engineers, and technicians working in the synthetic rubber, plastics, and petroleum refining industries, and in scientific research institutes affiliated with these industries.

CONTENTS: The book contains articles which report on research carried out at the Institute of Synthetic Rubber, Leningrad, and the Scientific Institute for Synthetic Rubber (Leningrad). The book also contains articles on the synthesis of synthetic rubber from natural rubber (Leningrad) and the synthesis of synthetic rubber from acetylene (Leningrad).

(State Scientific Research and Design Institute of the Synthetic Rubber Industry) Leningrad, 1950. 290 p. Krutaya alip inserted. 4,500 copies printed. The articles also discuss methods of extracting the products from their proprietary data. No personalization are mentioned. References accompany individual articles.

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Synthesis of Monomers (Cont.)

807/5155

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KOROTKEVICH, B.S.; SHENDRIK, M.N.; BOGDANOVA, O.K.; SHCHEGLOVA, A.P.;  
VINOGRADOVA, N.P.

Catalytic dehydrogenation of ethylbenzene. Khim.prom. no.4:243-248  
Ap '61. (MIRA 14:4)

(Benzene)

(Dehydrogenation)

S/195/62/003/005/007/007  
E202/E492

AUTHORS: Shendrik, M.N., Boreskov, G.K., Goryainova, R.M.,  
Slin'ko, M.G.

TITLE: Method of investigating catalysts undergoing rapid  
activity changes during the process of reaction

PERIODICAL: Kinetika i kataliz, v.3, no.5, 1962, 797-799

TEXT: A laboratory scale installation for studying circulation of reaction mixture with a continuous flow of catalyst through the reactor is briefly described. The method is used in the dehydrogenation of butane. The circulating system was kept at a constant pressure of 30 mm Hg. The reaction mixture was continuously removed from the reactor and its volume analysed chromatographically. Precipitation of carbon on the catalyst was also determined. It was shown that with the reaction gas circulation of 200 to 270 litres/hour, and the dehydrogenation reaction at 550 to 590°C, the time of residence of the pseudo liquefied catalyst in the reactor for a period of 11 to 20 min, equilibrium was reached within 4 to 6 hours and its stability retained as long as the volume of the catalyst permitted. The Card 1/2

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Method of investigating ...

activity of the catalyst expressed as litres ( $C_4H_8 + C_4H_6$ )/litres of catalyst·hour was measured by changing the residence time of catalyst in the reactor. Details of five runs with butane feed ranging from 6.6 to 12.7 litres/hour are given. There are 1 figure and 1 table.

ASSOCIATION: Giprokauchuk Institut kataliza SO AN SSSR  
(Giprokauchuk Institute of Catalysis SO AS USSR)

SUBMITTED: June 1, 1962

Card 2/2



SHENDRIK, M.N.; BORESKOV, G.K.; KIRILYUK, L.V.

Variation in the activity of a chromia-alumina catalyst in the process  
of butane dehydrogenation. Kin. i kat. 6 no.2:313-319 Mr-Ap '65.  
(MIRA 18:7)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR.

SHENDRIK, N.[Sendriks, N.]; Kholmogorov, A.

Let us realize in life the decisions of the July Plenum of the  
Central Committee of the Communist Party of the Soviet Union and  
the 3d Plenum of the Central Committee of the Latvian Communist Party.  
Vestis Latv ak no.10:5-18 '60. (EEAI 10:9:10

(Russia—Communist Party)  
(Latvia—Communist Party)

SHENDRIK, N. [Sendriks, N.]

Social and personal factors in the period of the large-scale building  
of communism. Vestis latv ak no.3:3-11 '61.

7771 01.01.1956  
VENEVTSEV, Yu.N.; ZHDANOV, G.S.; ~~SHENDRIK, T.N.~~

X-ray examination of the system  $\text{PbTiO}_3$ - $\text{PbSnO}_3$ . Kristallografiia  
1 no.6:657-665 '56. (MLRA 10:5)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova.  
(Lead titanates)  
(Tin compounds)  
(X-ray crystallography)

SHENDRIK, T.N., VENEVTSEV, YU.N., ZHDANOV, G.S.

"Investigation by the X-Ray Method of the System  $\text{PbTiO}_3$  -  $\text{PbSnO}_3$ ," by Yu. N. Venevtsev, G. S. Zhdanov, and T. N. Shendrik, Physicochemical Institute imeni L. Ya. Karpov, Kristallografiya, Vol 1, No 6, Nov/Dec 56, pp 657-665

An extensive solid solution area of  $\text{Pb}(\text{Ti}, \text{Sn})\text{O}_3$  extending up to 75 mol % of " $\text{PbSnO}_3$ " (actually  $\text{Pb}_2\text{SnO}_4 + \text{SnO}_2$ ) has been found to exist in the system  $\text{PbTiO}_3$  - " $\text{PbSnO}_3$ ". It was established that the constitutional diagram of the solid solution  $\text{Pb}(\text{Ti}, \text{Sn})\text{O}_3$  resembles that of  $\text{Pb}(\text{Ti}, \text{Zr})\text{O}_3$ , but differs from that of  $\text{Ba}(\text{Ti}, \text{Sn})\text{O}_3$ . The conclusion is drawn that the mechanism of the spontaneous electrical polarization of the seignetto-electric substance  $\text{BaTiO}_3$  differs from that of  $\text{PbTiO}_3$ , although the two were regarded as completely analogous up to now. This conclusion is based in part on X-ray crystallographic data which show that while in  $\text{PbTiO}_3$  crystal cells Pb cations are displaced, Ti cations are displaced in  $\text{BaTiO}_3$  cells.

Sum. 1287

*SHENDRIK, T.S.*  
UMANSKIY, A.A., kand.med.nauk; SHENDRIK, T.S.

Hypertension in adolescence. Terap. arkh. 29 no.5:79-88 My '58.  
(MIRA 11:4)

1. Iz Kirovogradskoy oblastnoy bol'nitsy.  
(HYPERTENSION, epidemiology,  
in adolescents (Rus)

CHERNENKO, A.R.; SIMFOROV, G.Ye.; SHKUTA, E.I.; TEREKHOV, I.P.;  
POLYANSKIY, P.S.; PISANKO, K.S.; SHENDRIK, V.K.; AL'TSHULER,  
M.A.; RIVKIN, I.D.; ENGEL', Ya.R.; CHETYRKIN, M.I., red.izd-va;  
PYL'NEN'KIY, A.A., red.izd-va; OSVAL'D, E.Ya., red.izd-va;  
PROZOROVSKAYA, V.L., tekhn.red.

[Sharp increase in the labor productivity of Krivoy Rog Basin  
miners; practices in the "Bol'shevik" and "Gigant" mines]  
Krutoi pod'em proizvoditel'nosti truda gornikov Krivbassa;  
iz opyta raboty shakht "Bol'shevik" i "Gigant." Moskva, 1960.  
173 p. (MIRA 13:11)  
(Krivoy Rog Basin--Iron mines and mining--Labor productivity)

TEREKHOV, I. P., gornyy inzh.; SHENDRIK, V. K., gornyy inzh.; POLYANSKIY,  
F. S., gornyy inzh.

Ore-mining techniques and equipment and the organization of  
labor in Krivoy Rog Basin mines should be changed. Gor. zhur.  
no.10:17-21 0 '62. (MIRA 15:10)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.

(Krivoy Rog Basin—Iron mines and mining)



PISANKO, K.S., kand.tekhn.nauk [deceased]; SHENDRIK, V.K., inzh.; POLYANSKIY,  
F.S., inzh.; PATLAN', M.N., inzh.

A new type of mine. Gor.zhur. no.1:30-35 Ja '65.

(MIRA 18:3)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog.

SHENDRIK, V.P.

Automatic starting and stopping of the ST-35 apparatus. Avtom.,  
telem. i sviaz' no.9:34-35 S '57. (MIRA 11:4)  
(Automatic control)

SHENDRIK, Yu.G. gvardii leytenant med.sluzhby

Field work at the unit level for students at the Academy of  
Military Medicine. Voen.-med.shur. no.8:52-54 Ag '56 (MIRA 12:1)  
(MEDICINE, MILITARY--STUDY AND TEACHING)

СИНИЦОВ, Г.

4597 L. Vologo-Akhtubinskaya Poyma. (S.-Kh. Osvoyeniye). M., Goskul'tprosvetizdat,  
1954. 20 s.; 2 L. Ill. 22 sm. (Vsesoyuz. S.-Kh. Vystavka). 3.500 Ekz. 40 k.-  
(55-432) P 333.1(47.3)

30: Knizhnaya, Letopis', Vol.1, 1956

DANILOVA, G.V.; LOYTER, M.N.; ALEKSEYEV, N.A.; KOVALEV, I.I.; DANILOV, A.Ye.;  
~~SHENDRIKOV, G.I.~~, i.o. glavnogo metodista; ORLOVA, V.P., redaktor;  
PAVLOVA, M.M., tekhnicheskiy redaktor

["Water resources management and rural hydroelectric power stations"  
pavilion; a guidebook] Pavil'on "Vodnoe khoziaistvo i sel'skie  
gidroelektrostantsii"; putevoditel'. Moskva, Gos. izd-vo selkhoz.  
lit-ry, 1956. 21 p. (MIRA 9:12)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka, 1954-
2. Direktor pavil'ona (for Danilova)  
(Moscow--Agricultural exhibitions)  
(Water supply, Rural)  
(Hydroelectric power stations)

SHENDRIKOV, G.L.

KOVUN, P.K.; NEVZOROV, A.P.; ANTONENKO, G.P.; BUDINA, L.V.; VORONINA, Ye.P.; GUSEV, P.I.; YELAGIN, M.N.; ZHURAVLEV, M.A.; ZALOZNYI, K.D.; KOMKOV, V.N.; KOROBV, A.S.; KORCHAGIN, V.N.; LAVROV, V.N.; LAPSHINA, O.V.; LUTIKOV, I.Ye.; MAKEVNIN, A.Ya.; MOROZOVA, F.I.; NEVZOROV, A.P.; PONOMARCHUK, M.K.; PUCHKOV, A.M.; RAZMOLOGOVA, A.M.; RUBIN, S.M.; SELEZNEVA, O.V.; SEMENOVA, F.I.; SPIRIDONOVA, A.I.; SUSHCHEVSKIY, M.G.; USOV, M.P.; TARKOVSKIY, M.I.; CHENYKAYEVA, Ye.A.; SHENDRIKOV, G.L.; SHUL'GIN, G.T.; TSITSIN, N.V., akademik, redaktor; REVENKOVA, A.I., redaktor; KHOKHRINA, N.M., khudozhestvennyy redaktor; VESKOVA, Ye.I., tekhnicheskiiy redaktor; PEVZNER, B.I., tekhnicheskiiy redaktor.

[Plant breeding at the 1955 All-Union Agriculture Exhibition] Rasteni-  
vodstvo na Vsesoiuznoi sel'skokhoziaistvennoi vystavke 1955 goda. Moskva,  
Gos.izd-vo sel'khoz.lit-ry, 1956. 687 p. (MLRA 10:4)  
(Moscow--Plant breeding--Exhibitions)

SHENDRIKOV, G.L.

AUTHOR: Shendrikov, G.L.

26-10-20/44

TITLE: Use of the Hydraulic Drill in Orchards and Vineyards (Primeniye gidrobura v plodovodstve i vinogradarstve)

PERIODICAL: Priroda, 1957, No 10, pp 100-102 (USSR)

ABSTRACT: The author describes experiments he conducted in the field of irrigation with a hydraulic drill developed by him in co-operation with Professor N.D. Kholin in 1953. The method solves the problem of subsoil irrigation and fertilization of fruit trees, grapes and berry bushes with mineral and organic solutions. The hydraulic drill consists of an ordinary water pipe of 12 - 22 mm in diameter and 0.8 - 1.0 m in length, which is provided with a screw-on nozzle. The water brought in by the drill develops enough kinetic energy to drill a hole in the ground and to force the liquid under 1.5 - 2.0 atm pressure into the soil. It penetrates through the pores and channels of the earth and surrounds the entire root system of the respective tree or bush, thus creating very favourable conditions for the plant. The system is now widely used on state and collective farms in the USSR. It is also successfully applied to fight the dangerous insect pest phylloxera by forcing appropriate poisonous liquids into the

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Use of the Hydraulic Drill in Orchards and Vineyards

26-10-20/44

soil. The hydraulic drill is further used for planting young vine plants which need deep holes and well distributed moisture.

There is one figure and one photo.

ASSOCIATION: All-Union Agricultural Exposition (Moscow) (Vsesoyuznaya sel'skokhozyaystvennaya vystavka (Moskva)

AVAILABLE: Library of Congress

Card 2/2



AUTHORS: Kholin, N., Professor, Shendrikov, G., Engineer SOV/29-58-7-6/23

TITLE: Water May Be Obtained From the Air (Voda mozno dobyvat' iz vozdukh)

PERIODICAL: Tekhnika molodezhi, 1958, Nr 7, pp. 6-7 (USSR)

ABSTRACT: Already for some considerable time endeavors have been made to work out a method of irrigation by means of which the water may be conveyed straight to the roots of the plants. The authors of this article once constructed a very simple and handy water-drill for the introduction of loamy solutions into the soil. It operates on the principle of underwashing the soil. During a long drought on the Crimea in 1957 an area of more than 15000 acres of vineyards was endangered. The agronomist D. Kovalenko suggested that each vine be allotted 3-4 l of water. The drill constructed by the authors was used for this purpose. As a result, the plants recovered and the crop was saved. Already in 1944 tests were carried out with this drill. Five liters of water were poured into the soil to a depth of 60 cm. After 12 hours sections were cut out along the axis of the drill hole. It was found on this occasion that the soil contained 4 times the amount of water

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introduced. After 48 hours the soil contained even more water. Similar phenomena were observed by scientists already at earlier periods. The prominent agronomist and meliorator A.N.Kostyakov recommended underground condensation irrigation. No exact explanation of all phenomena connected with the condensation of air-vapors in the soil has hitherto been found. The most important work was performed in this field by Professor V.V.Tugarinov, who proved it possible to convert atmospheric vapors into water. The application of hydromechanical methods makes it possible to put the ideas developed by Tugarinov into practice in a considerably more simple and easier manner. The soil itself is used as a condenser. In reality the introduction of water into the soil by means of a drill is necessary only for the purpose of providing channels making it possible for hot air to penetrate into the soil, thus causing a peculiar sort of underground rain. The water-drill is used not only for the purpose of irrigation but also for the purpose of supplying the plants with additional nourishment, a practice which was formerly considered to be of eminent importance by the famous selector I.V. Michurin. The drill mentioned may also be used with good success for the

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Water May Be Obtained From the Air

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purpose of exterminating the phylloxera, a parasite which attacks the roots of vines. It has also been found useful when planting shoots. The drill is now being used also for other purposes as e.g. the draining of boggy land, the putting up supports for vines, and for the prevention of the filtration and oversalting of the soil. By means of this simple device it will be possible to realize an old dream: to convert the desert areas of Kara-Kum into flourishing gardens. There are 3 figures.

1. Irrigation systems--Design
2. Irrigation systems--Test results

Card 3/3

SHENDRIKOV, G., inzh.; SOROKO, Ya.

Over-all mechanization of land reclamation. Nauka i pered. op. v  
sel'khoz. 8 no. 7:37-36 J1 '58. (MIRA 11:8)  
(Agricultural machinery)